THE EARLY DIFFERENTIAL DIAGNOSIS OF TYPHOID FEVER.

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So protean in its forms is typhoid fever that it is seldom a differential diagnosis of the disease can be made earlier than is possible by bacteriological aids. This is stated to be from the third to the fifth day, at which time cultures may be made from the blood with reasonable certainty. It is not until the second or third week that the rose-spots, stools, or urine may be used for the purpose of recovering the specific bacilli. However, at this stage of the disease the serum tests, and Diazo-reaction are the most useful and generally employed tests as furnishing us with positive information.

Cultural methods are not always clinically available, or satisfactory, as to draw blood from a patient already weakened by process of disease is, to the family, as well as to the patient himself, a radical procedure.

The serum test by Widal's method, or by dead cultures, which does not necessitate the use of a microscope, must appeal to us as being the simplest, and most useful methods we possess for diagnostic and confirmatory evidence.

There are instances in which it is desirable to make a differential diagnosis earlier than is possible by laboratory aids. In such cases the diagnostic acumen of the physician is severely taxed. His success must rest with his ability to interpret and allocate certain symptoms, both by process of exclusion and inclusion. In infants and young children, he must first forget all that he has learned of the symptoms of typhoid fever in the adult. In the negro he must learn to depend almost entirely upon serum tests, and in all cases, generally, he must expect to meet with types varying in picture from that of a typical typhoid fever, which is most unusual, to syndromes of such heterogeneous manifestations as to preempt altogether characters of a nosological entity.

Typhoid fever, as Herrick cleverly puts it, is not only an imitator of diseases, but many other diseases imitate typhoid fever. He depricates the old term "Enteric Fever" but fails to suggest one more in keeping with its etiologic rather than its anatomic concept.

It is more frequently the case that typhoid is mistaken for other disease than the converse. Those most likely to be confusing are malarial fever, acute tuberculosis, appendicitis, pneumonia, acute nephritis and influenza. These we shall consider seriatim.

Malarial fever of remittent type is the disease most likely to be met with in this locality as offering characteristics of typhoid fever. Owing to the early and constant appearance of the malarial parasite in the blood of malarial affections an early differential diagnosis should be common property to all possessing a good microscope and experience in blood work. It is well to remember, however, that all cases presenting plasmodium malariae should not necessarily exclude a typhoid fever, as the two diseases have frequently been observed to run a simultaneous course, being the result of a mixed infection. This is not to include the many cases of typhoid fever whose course may be somewhat modified by a concomitant substratum of chronic or masked malaria, but the hybrid resulting from the simultaneous growth of the plasmodium malariae and bacillus typhosus. The following case is illustrative.

Patient.—Mrs. A. C. S. Scotch, age 37. Complained of frequent micturation and vesical irritation. Most troublesome at night. Chilliness, headache, backache and great nervousness.

Courses of Disease.—Next morning there was severe chill lasting two hours, fever, and increase in severity of all symptoms. Not knowing whether these symptoms were due to a cystitis or to some oncoming disease, examination of blood was made with result of finding malarial parasites in abundance.

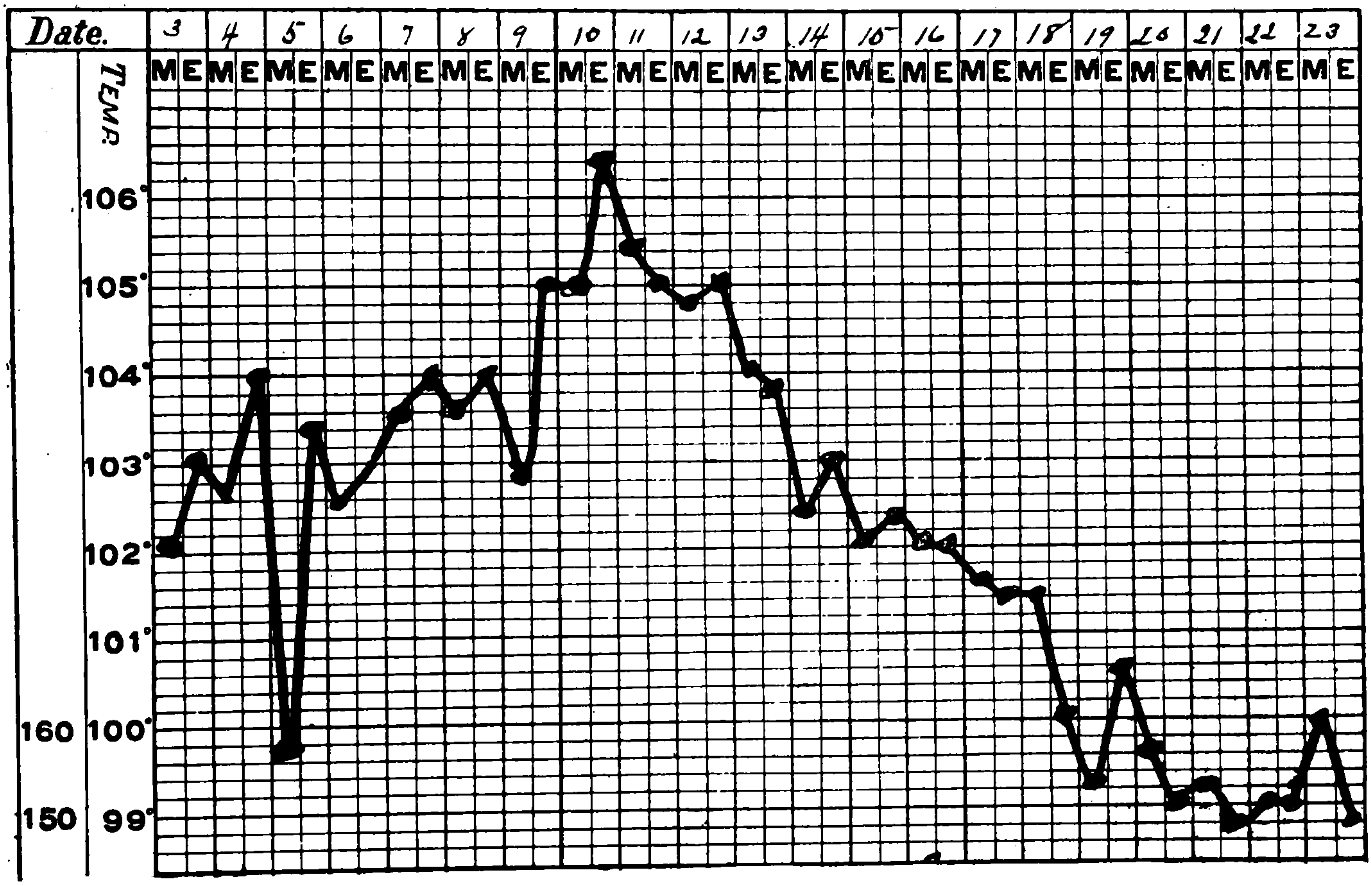

Chart I—Mixed Infection Malarial and Typhoid.
Plasmodium found on 3rd. Widal's Positive found on 12th.

Anti-malarial treatment was vigorously pushed and patient seemed to have been relieved of all symptoms except the cystitis. Temperature dropped from 104 to 99.8 and remained at this point for two days when it suddenly rose to 104 again, and could not be reduced in spite of active treatment. Mild delirium now set in, and constipation gave way to diarrhoea. Patient seemed to be getting worse, delirium becoming wild, necessitating restraint to keep her in bed. For the first time my attention was attracted by rose-spots on abdomen, this with the fact that quinine was doing more harm than good led me to suspect a mixed infection, therefore, further examination of blood was made by Widal's serum reaction which gave positive results. The urine gave positive Diazo-reaction and contained .2 per cent. of albumin, many tube casts, and typhoid bacilli in almost pure culture. The accompanying chart will show how cold baths terminated the disease by lysis. (Chart 1.)

In differentiating typhoid from malaria by aid of quinine therapy we must bear in mind that the results are not always dependable. The generally accepted statement that any fever of over a week's duration, which resists the action of quinine, is usually typhoid fever, is far from being correct. Jackson (Trop. Med.) states as follows: "The teaching that fevers which resist quinine are not malarial in origin, even when limited to the *intermittent variety,* will not stand the test of experience. . . . . It is therefore unsafe to make this unqualified statement." (Italics mine.)

Malaria fever, aside from its blood findings, and quinine reaction, may be recognized by its more or less characteristic symptoms, however, as many of them are also common to typhoid fever, we must closely search for those as most likely to furnish a clue. In a general way, we are to expect in malaria fever vomiting and chill, or chills. This is infrequent in typhoid fever. Headache is rending, and is most frequently frontal, while in typhoid fever it is less acute and more frequently occipital. Tongue in malaria fever is large, flabby, white and with marginal indentation of teeth. In malarial districts we get quite tired of looking at large white tongues. The typhoid tongue is not flabby and usually presents red margins.

The abdomen of malarial fever patients is more scaphoid than otherwise, and presents a different picture from the typhoid fever abdomen which may, and usually is, slightly distended. These, with the other manifestations, more or less characteristic of the disease should be sufficient to establish a differential diagnosis, in absence of the serum blood and quinine tests.

Acute tuberculosis in its miliary form is in absence of a clear history, almost certain to be diagnosed as typhoid fever, should serum tests be omitted as furnishing positive evidence. Its recognition must largely depend upon physical signs which are fairly constant. In no disease is a clear history of more value. We must diligently search for a tubercular source of infection and make our physical examination of the patient a matter of paramount importance. The following symptoms of acute miliary tuberculosis are sufficiently constant to be of value in establishing a differential diagnosis. Fever is irregular, usually higher and more intermittent than in typhoid fever. Pulse is rapid, weak and not dicrotic. Respiration is rapid. Cough is prominent and may be productive of bloody sputum. Spleenic enlargement is not an early occurence. Diazo-reaction is of no value, as it may be positive in both diseases. The serum test, or detection of specific bacillus alone may furnish positive information.

The following case was instructive, as it presented many symptoms common both to acute miliary tuberculosis and typhoid fever.

Patient.—Male mulatto, age 20. Porter and elevator boy.

Family History.—Father and mother living. Mother delicate. Father alcoholic and epileptic. No history or evidence of tuberculosis in family. However, no personal examination made to determine this.

Course of Disease.—Patient had been steadily losing flesh and strength. Gave history of occasional night sweats. He was taken suddenly ill while at work and had to be sent home in a cab. He stated that he was suffering with violent headache and felt quite chilly, in fact, he was having a chill at the time I saw him. Temperature 101. Pulse 110. Respiration 30. Blood smear was made with negative results, but quinine in full doses was administered notwithstanding, as "chill tonic" had been administered by family. Next day temperature rose to 104, and provisional diagnosis of typhoid fever was made. This, however, seemed to demand revision on account of very irregular course of fever. Patient now became delirious and there was comavigil and carphology which again so strongly suggested typhoid fever as to cause Widal's test to be made on two occasions with negative results.

On careful physical examination the left lung was found to give evidence of tuberculosis. The patient developed a meningitis and died on the tenth day, after a sudden rise of temperature, the same reaching 106.5. (Chart 2.)

The clinical aspect of Landouzy's typhobacillosis is that of some form of typhoid fever. The absence of rose-spots being about the only distinguishing feature, which we must admit is a very untrustworthy one, and altogether unavailable in the negro, therefore, as Landouzy states, certainty of diagnosis is obtained only by innoculation of animals with blood, or with the sediment of centrifugated urine.

Appendicitis is differentiated by the acuteness of the attack, by its local as well as general characteristics, also by the history of its onset.

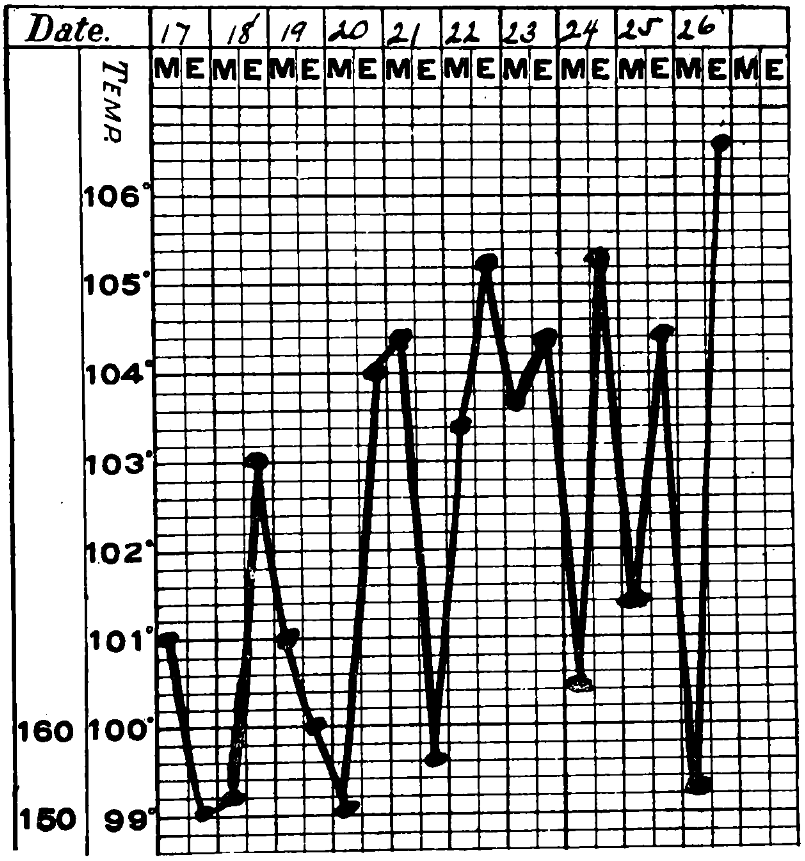

Chart II—Acute Miliary Tuberculosis.
No Malarial parasites 17th. Widal's negative 24th and 26th.

The picture is one of more gastro-intestinal disturbance than is usual in typhoid fever, pain being a prominent feature, and is localized.

Absence of rose-spots and negative Widal's should establish a diagnosis. It is well to remember that a leucocyte count may be of service.

Pneumonia, when not of the lobar type—which is easily recognized by its classical symptoms—will manifest itself as typho-pneumonia, which is to be distinguished from pneumo-typhoid.

Pneumo-typhoid is attended with symptoms of great physical prostration and weak heart-action. With these there are other symptoms of the typhoid state. A blood count of the white cells is of much diagnostic value, that is, where the increase or decrease is marked, otherwise the count means nothing, and diagnosis must rest with the agglutinating properties of the blood. Anders states that in pneumo-typhoid, after the end of the first week, unmistakable symptoms of typhoid fever arise. However, at this time Widal's reaction will make certain the diagnosis.

Acute nephritis may of itself present symptoms closely resembling those of typhoid fever, or it may be the first manifestation of typhoid fever masking its etiology altogether, inasmuch as all other symptoms of the disease stand in the background until the acuity of the process subsides, then fever, mild delirium, rose-spots and enlargement of spleen should put us on right track.

Whether the nephritis be a nephro-typhoid condition or not, it is plainly our duty to carefully search for its causative factor, for certain it is that many cases of acute nephritis have been diagnosed as typhoid fever when its pathology was due to some other cause.

Influenza should offer no difficulties in its recognition should the disease be epidemic, but it is the sporadic cases of mild infection that are likely to prove at all confusing. Pain and catarrh are two prominent symptoms of grip, accompanying these there is great nervousness and prostration—out of all proportion to the severity of the attack or physical signs. The typhoid type of the disease requires laboratory aid for certainty of diagnosis. The detection of the influenza bacillus may, of itself, stamp the individuality of the disease.

The frequent association of typhoid fever with the exanthematous diseases makes a careful search towards the direction of hidden etiology a matter of great moment not so much for the recognition of typhoid fever as for the purpose of exclusion of the other diseases, which upon early recognition are best controlled by proper isolation.

Before accepting a positive serum reaction as conclusive, it is well to ascertain if patient has had typhoid fever within the past two years, also to remember that in rare instances Widal's reaction may be positive in other diseases. We are also warned to ascribe to serotests a place in differential diagnosis not greatly exceeding that of any other one prominent symptom.